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APPROACH TO A UNIVERSITY LIBRARY DESIGN.

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REPORT NUMBER RR-13 PUB DATE 58
EDRS PRICE MF-$0.25 HC-$0.56 12P.

DESCRIPTORS- *LIBRARY SERVICES, *LIBRARY STANDARDS, *PHYSICAL DESIGN NEEDS, *SPACE UTILIZATION, *UNIVERSITY LIBRARIES, AUDIOVISUAL INSTRUCTION, CONTROLLED ENVIRONMENT, EDUCATIONAL PHILOSOPHY, FLEXIBLE FACILITIES, PLANNING, SPATIAL RELATIONSHIP,

THIS REPORT DISCUSSES THE CONSIDERATIONS INVOLVED IN THE DESIGN OF A UNIVERSITY LIBRARY SHOWING HOW ONE FIRM IN COMPETITION APPROACHED THE PROBLEM ON A PREDETERMINED SITE. CONSIDERATIONS ARE (1) DEFINITION OF THE EDUCATIONAL AIMS AND PHILOSOPHY OF THE INSTITUTION, (2) RELATING THE FUNCTIONS OF TEACHING AND RESEARCH PROGRAMS TO THE LIBRARY, (3) PRESCRIBING THAT FORM FOLLOWS FUNCTION, AND (4) ANALYZING ALL THE ACTIVITIES USING SPACE. THE PROCEDURE IS TO (1) SURVEY THE LITERATURE, (2) DEFINE THE PLACE OF THE LIBRARY IN THE UNIVERSITY, (3) INSPECT NEW LIBRARY FACILITIES, (4) BECOME FAMILIAR WITH SPECIAL SITE PROBLEMS, AND (5) DEVELOP PREMISES FOR PLANNING A UNIVERSITY LIBRARY. THE REPORT PRESENTS IN DETAIL THE CHARACTERISTICS OF THE LIBRARY WHICH ARE ITS FUNCTIONS, CLIENTELE, AND OPERATIONS. EDUCATIONAL EFFICIENCY IS DISCUSSED WITH REGARDS TO (1) OPEN SHELVES, (2) LABORATORY SITUATIONS, (3) AUDIO-VISUAL SERVICES, (4) DIVISIONAL ORGANIZATION OF COLLECTION, (5) GENERAL EDUCATION PROVISIONS, AND (6) FUNCTIONAL BUILDINGS. SITE CONSIDERATIONS AND PREMISES FOR FUNCTIONAL PLANNING ARE DESCRIBED. THEIR SOLUTION CENTERED AROUND (1) THE SERVICE AREA, (2) CONTROLS, (3) STACK AREA, (4) PROVISION FOR UNDERGRADUATES, AND (5) FLEXIBILITY. INCLUDED IS A LIST OF SELECTED REFERENCES ALONG WITH DIAGRAMS, SKETCHES, AND CHARTS. (RK)

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RESEARCH REPORT 13

APPROACH TO A UNIVERSITY LIBRARY DESIGN

by MICHAEL V. KRENITSKY*

WE looked upon the invitation to participate in a design competition of a university library as an opportunity to make a contribution to the field of higher education. Our homework was cut out for us and, more important, we had the extra challenge of designing a structure that is generally thought of as the "heart" of the university. Guided by our fundamental philosophy that a sound approach to the solving of architectural problems will produce successful designs of buildings, our "team" of designers, engineers, draftsmen and librarian (author Krenitsky) set to work.

A university library is an agency that is subjected to a variety of uses and functions. The approach to the design of such a complex structure should take into account the following essential considerations:

1. The educational aims and philosophy of the institution must be defined.
2. The library exists to meet certain definite functions related to the teaching and research program of the university.
3. The building must be functional, designed from the inside out, and must reflect the particular functions of the particular library. Form must follow function.
4. A detailed and specific analysis of all the activities which are to have space in the library building must be made.

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THE PROBLEM:

Integration of a contemporary and highly functional building with a fine old environment was the heart of the problem faced by the six invited participants in the recent competition for a 3.5 million dollar central library to be the first unit in the ten year "Second Century Development Program" of Washington University in St. Louis, Missouri.

Invited to participate in the competition were Jamieson, Spearl, Hammond and Grolock, architects of St. Louis; Hellmuth, Obata, and Kassabaum, architects of St. Louis; Murphy and Mackey, architects of St. Louis; Edward D. Stone, architect of New York; Louis I. Kahn, architect of Philadelphia; Caudill, Rowlett, Scott and Associates, architects of Bryan, Texas. The winning scheme was submitted by Murphy and Mackey of St. Louis.

Members of the jury were Dean William Wurster of the University of California School of Architecture; Charles W. David, former director of libraries at the University of Pennsylvania; and Henry R. Shepley of the Boston architectural firm of Shepley, Bulfinch, Richardson & Abbott. Buford Pickens, dean of the university's School of Architecture since 1953 and now architectural adviser for the development program, was professional adviser.

This report is made in the interest of better architecture, showing how one firm approached the problem of designing a functional library building on a predetermined site.

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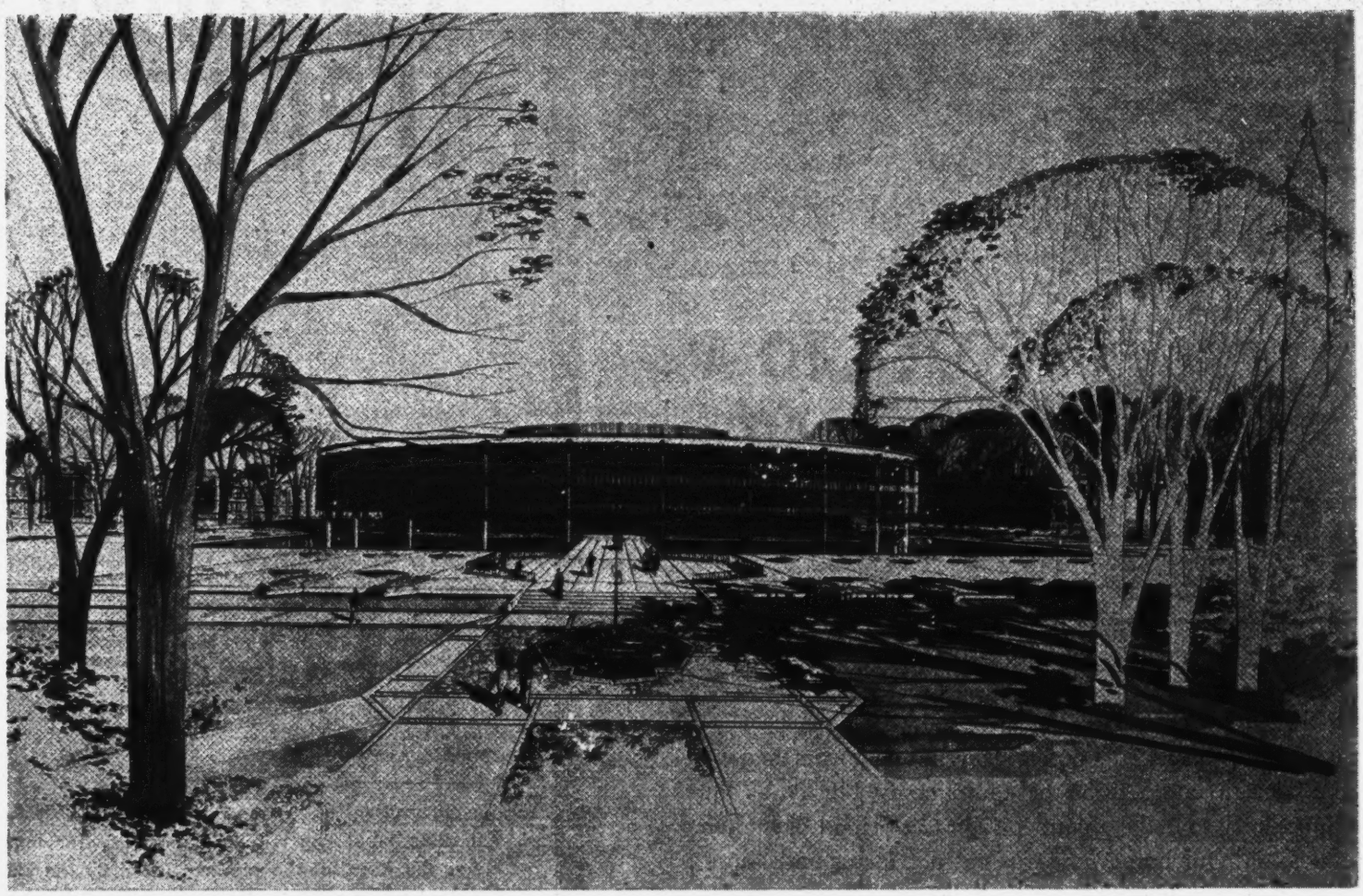


Copper tracery of the proposed library building serves as a sun control device. A large portion of the stack area is placed below the site line, so that beautiful vistas of the existing campus will be preserved.

It was important that we make a thorough study of the university library program in order to get a clear perspective of the aims and objectives the library was attempting to achieve. This meant intensive research, which we developed along the following lines:

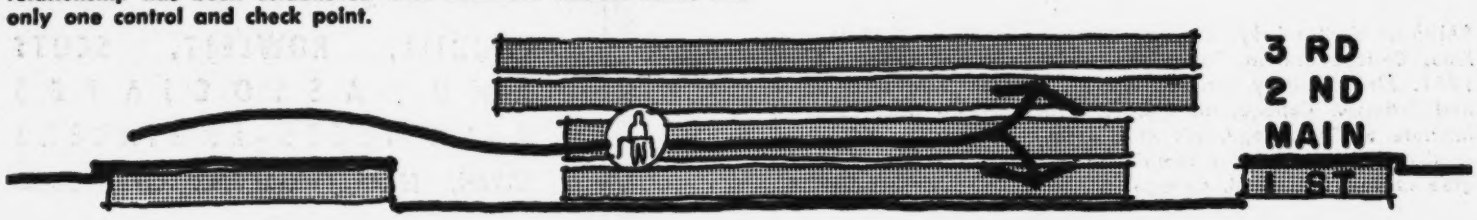
1. A study of the significant literature dealing with university library buildings. This study is reflected in the selected references included in this report.
2. An attempt to define the place of the library in the university in terms of (a) philosophy, aims and functions of the library; (b) trends in university library buildings; (c) recent educational trends and their relationship to the library; (d) functions of the major divisions of a university library.
3. Inspection trips to universities that have constructed new library buildings in the past few years.
4. Tour of the Washington University campus to get a better understanding of the special site problems involved.
5. Development of premises for planning a university library building.

The Library in the University

The university library has always been a part of the educational program. The beginnings of our educational history were characterized by small libraries with few books and little use by students. Library philosophy during this early period was dominated by emphasis on the preservation of books, and not upon their use. The librarian was looked upon as custodian of the books rather than as a teacher.

The beginning of the twentieth century saw a gradual change in the philosophy of the library's place in the university. Increased research, new methods of instruction and more publications were instrumental in bringing about a change in the concept of the university library. It became apparent that the strength of the teaching and research program was dependent upon the strength of the library. We had a joining together of

Main floor is, in essence, the middle floor. Proper priority of space relationship has been established with minimum vertical traffic and only one control and check point.

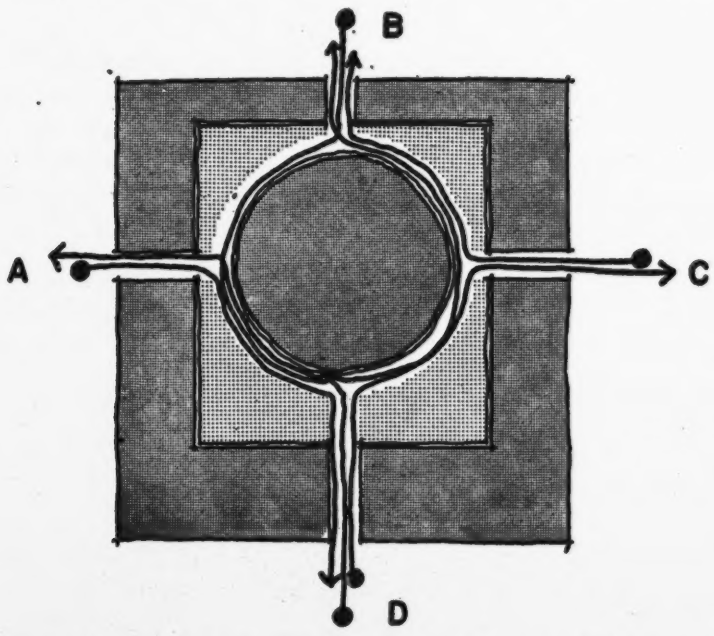


forces—intellectual growth was impossible without the growth of the library.

The library became the central point in the university program. The philosophy of storage and preservation was supplemented by the philosophy of making materials available for use. Gradually the philosophy of making the book available dominated. This brought about an entirely new concept of library service—that the book and the reader must be brought together with adequate provision for study and research.

Characteristics of a University Library

The university library performs a two-fold function: (a) preservation of recorded knowledge, and (b) making this knowledge available for use. The clientele of a college or university library can be classified as undergraduates, graduates, faculty and staff, general public and visiting scholars.



Student traffic flows through library, yet *not in it*. Students see the books and inviting places to use them. Traffic flows to these areas: A—Parking, union, auditorium, dormitories, hall; B—Parking, chemistry, engineering; C—Parking, law, business, administration; D—Parking, geology and biology.

In order to carry out its functions and provide satisfactory service to the users, the library must provide these basic essential services: accommodation of the library book collection; accommodation of the readers; provision for the administrative element of the library.

The areas of library operations are grouped as follows:

1. Service or information area
2. Main reading area
3. Processing area
4. Stack or storage area

Administratively, the university library is usually divided into these operating units:

1. *Circulation Department*—The circulation desk is often the first point of contact that the patron has with the library. This unit is concerned with charging out books, keeping records of books in circulation, discharging books returned to the library, reshelving returned library books, etc.

2. *Reference Department*—Reference librarians answer questions, interpret the catalog and periodical indexes, and provide aid in using bibliographic tools. This unit is mainly concerned with interpreting for the patron the resources of the library.

3. *Acquisitions Department*—This department is responsible for ordering all book and non-book material which comes to the library. It is this unit that spends and accounts for the book funds, gives trade information about books, and establishes exchange programs with other libraries.

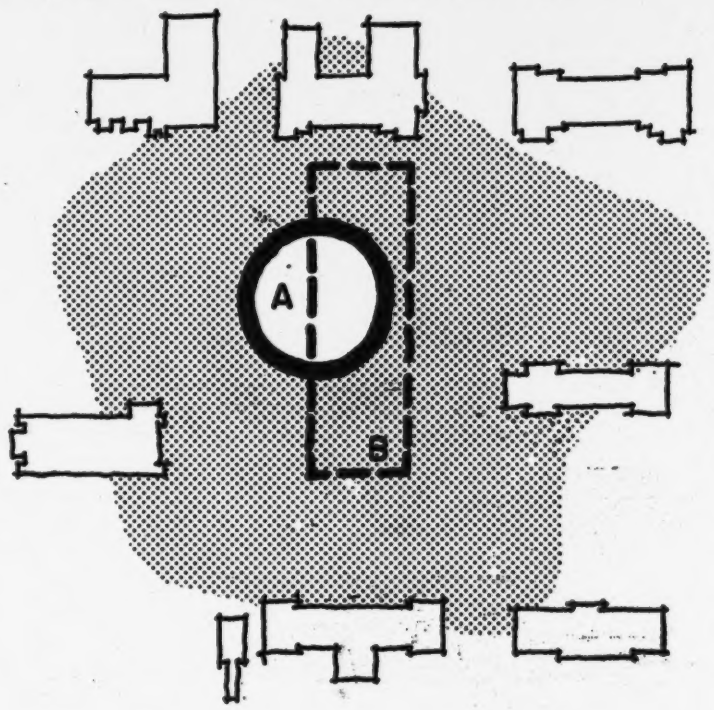
4. *Catalog Department*—After a book has been received in the library and checked in the acquisitions department, it is then sent to the catalog department to be classified and prepared for shelving. Catalog cards are compiled to describe the book. These cards are filed in the general card catalog and serve as an index to the holdings of the library.

The reference and circulation departments are often called the public service division, while the catalog and acquisitions departments are often spoken of as the technical processes division. There is usually an assistant librarian for each of the public service and technical process units. At the overall head of the entire structure is the librarian, sometimes called the director of libraries.

Increased Educational Efficiency

Recent library developments indicate a trend that takes into account the teaching as well as the storage

Spatial unity of the campus is preserved and the library does not crowd or dominate adjacent buildings. Section A is one-half level above grade; section B is four-fifths level above grade.



needs of the university. These developments, leading to increased educational efficiency of the library, have been stated by Raynard C. Swank as follows:[1]

1. *Open Shelves*–Key to all designs for the library as a teaching instrument. Direct access to all or a major part of the book collection is now accepted as a stimulant to reading. Physical and administrative barriers formerly set between reader and books have been removed. Every reading room is a browsing room in which students are brought into contact with teaching materials. The variations in open shelf arrangement range from simple access to a conventional book stack to flowing distributions of stacks throughout reading areas. Access may be permitted to entire collections or only to selections of most important books.

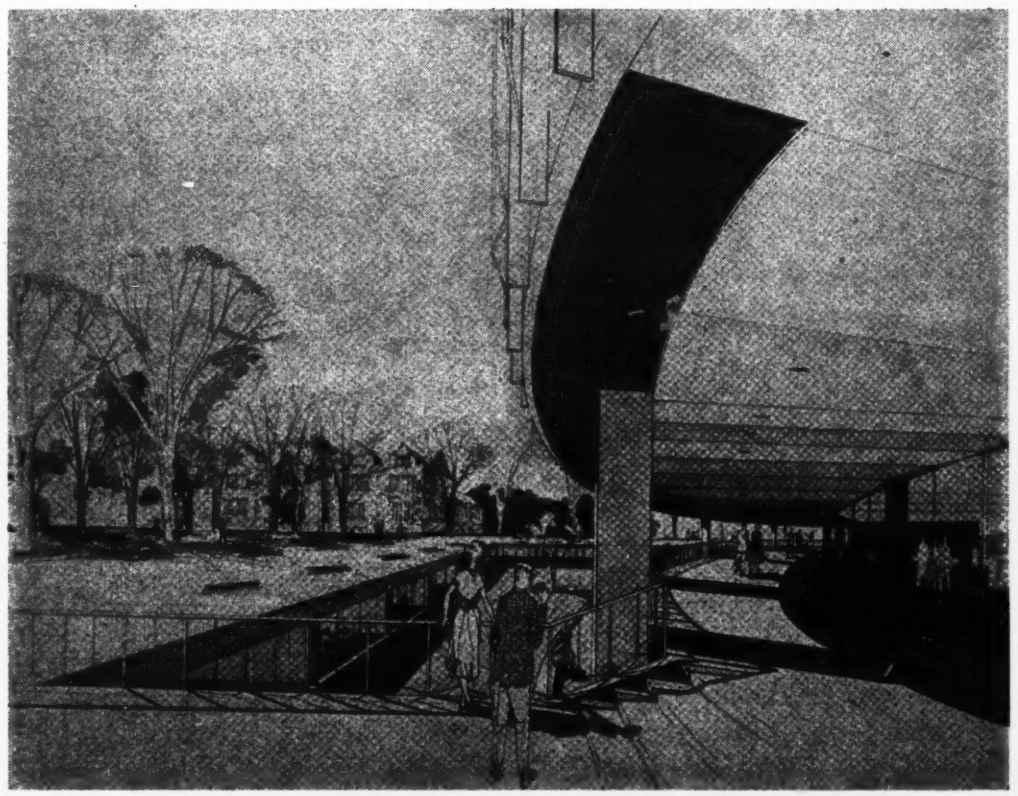
2. *Laboratory Situation*–The library is no longer merely a place to read; it is a workshop in which faculty, students, and librarians work together. It becomes a great study center for the campus. To create a laboratory situation, an abundance of special study facilities, in addition to reading tables, are provided in proximity to the book collections–carrels, faculty offices, conference rooms, seminar rooms, typing rooms and the like. As far as is possible, all the facilities needed for scholarly use of books are conveniently located in the library.

3. *Audio-Visual Services*–Significant current developments in the field of motion picture films, sound recordings and slides are now leading to the organization of audio-visual centers. Booths, projection rooms, reading areas for microfilm and microcards, work areas, must be provided for the use of this material. The newer libraries, planned as teaching instruments, must almost always provide in some way for these services. The laboratory concept of the library means concentration of all important kinds of instructional materials.

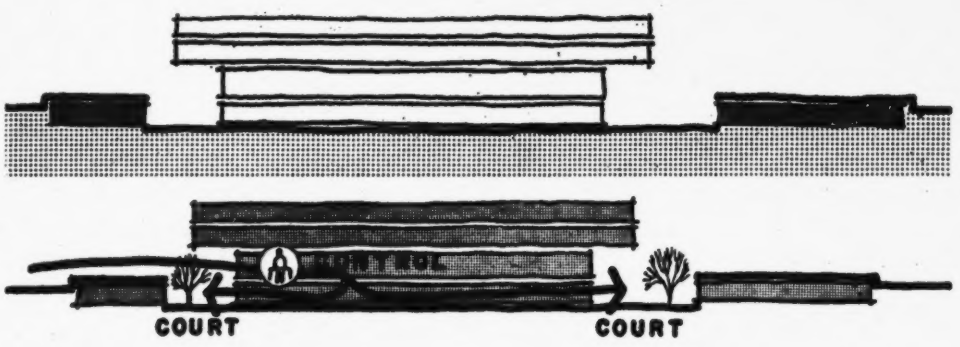
4. *Divisional Organization of Collection*–Increased professional knowledge concerning the learning process, the methods of scholars, the existence of research materials and the communication of ideas has been instrumental in reorganizing libraries to be more responsive to the needs of the patrons. The movement away from textbook and lecture form of teaching toward a fuller use of a more independent type of study and research has had much influence on this type of library organization. The principal tenets of the Divisional Plan are:

A. All functions of the library, except administration and technical processes, are divided

[1] Raynard C. Swank, "Educational Function of a University Library," *Library Trends*, I (July, 1952), pp. 37-47.



To the right are reading rooms on the main floor and to the left are the peripheral reading rooms which join the stacks and which open to the sunken terrace. Students may travel through the library but need not enter the building.



The dropped portion of the building provides economical space. Maximum earth-bound walls allow minimum heat loss in winter and heat gain in summer. The slab on earth floor is an economical way to provide a 200-lb. live load for stacks.

The student has free use of all courts without loss of library control from within the building.

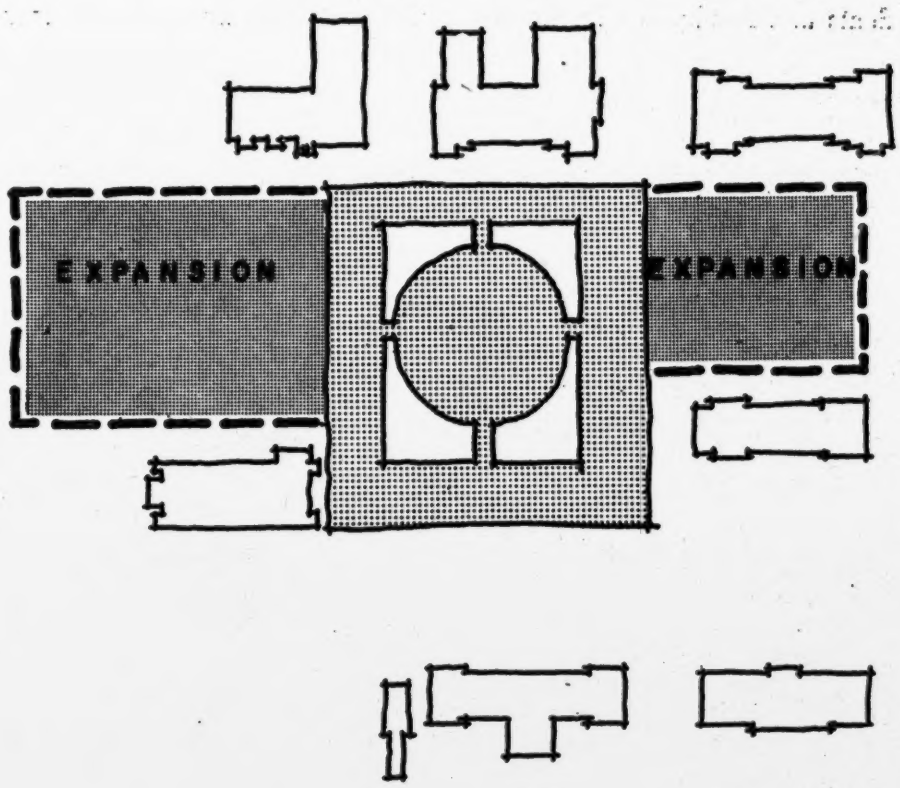
into subject areas—social sciences, humanities, science and technology, etc.

B. Free and open access to all materials is implicit in the divisional plan. Central library has divisional reading room for each subject area consisting of open shelf collections. There may also be a core stack, containing little used items.

C. Public service librarians, or those serving the divisional reading room, are subject specialists rather than reference or circulation librarians.[2]

[2] J. R. Blanchard, "Departmental Libraries in Divisional Plan University Libraries," *College & Research Libraries*, XIV (July, 1952), pp. 243-248.

5. *General Education Provisions*—Occupied, especially during his first two years, with the assimilative learning characteristic of most elementary courses, the undergraduate had needed daily access to a relatively small collection of books. Elimination of the textbook-recitation method of instruction has tremendously increased the use of the library by the undergraduate. With the reserve book system the library has provided textbook materials which the student cannot be expected to buy for himself. In recent decades universities have established separate and better facilities for the undergraduate. This is designed to give beginning students an appropriate and desirable first library experience, to instruct them

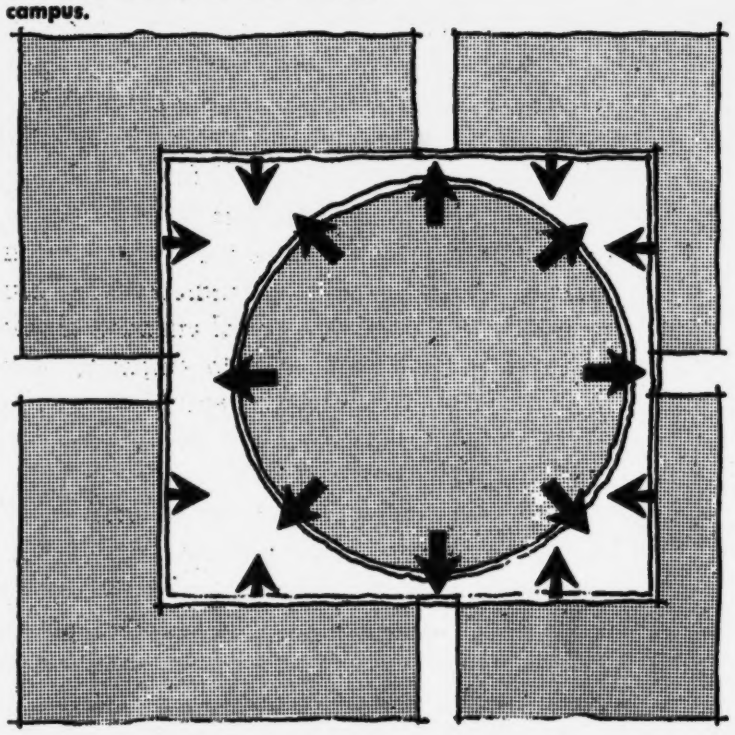


Design of the library building provides for unlimited expansion below grade without disrupting the proportions, scale and spatial relationship of the original structure.

in the best use of the library, and to spare them the research library until they undertake advanced study of a specialized nature.

6. *Functional Buildings*—Some of the methods of increasing the educational effectiveness of the library are contingent upon a building designed to meet the demands of open stacks, laboratory situations, audio-visual services, subject division organization, and general education services. Flexibility is required in order to accommodate a variety of new services and to be readily modified as educational needs change. Open planning, dry construction, advances in air conditioning and lighting and pleasing appointments have all contributed to make the library a vital force in the educational program of the university.

All reading stations are located on the perimeter and permit users to view the beauty of the existing campus.

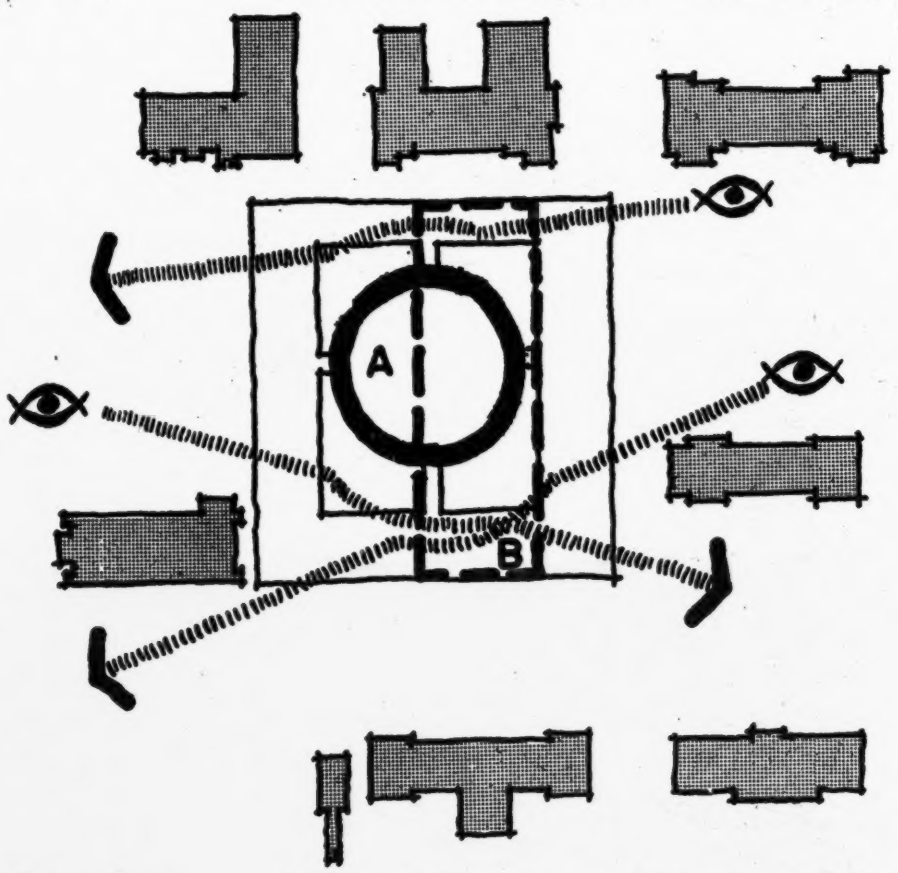


Site Considerations

The new central library would be one of the largest and most important buildings on the campus. The problem was to keep the fine scale of the campus, and to relate the building to other units of the inner quadrangle on the East and the more widely dispersed buildings on the West, extending past the chapel and dormitories to

the fieldhouse. By going below the surface of the ground we were able to eliminate the large bulk which would result from housing all of the facilities above ground. The entrance is on the ground floor with two floor levels above and one below. This scheme also has the advantage of eliminating the long distances readers would have to travel to reach various areas of the building.

We also strived for a design that would have an inviting reading and study environment, in keeping with the plan to make this one of the largest and most important buildings in the ten-year "Second Century Development Program" of Washington University. Students and faculty would become a part of this atmosphere as they moved in and around the building each day. The court areas bring the outdoors into the library, and create a dignified informality so often lacking in library architecture. Daily student traffic actually becomes a part of the library atmosphere without requiring the students to enter the building.



With a large portion of the stack area being placed below the sight line, unobstructed vision lines are maintained of the beautiful vistas which surround the library building. Both the A and B portions of the structure are above grade.

Premises for Planning

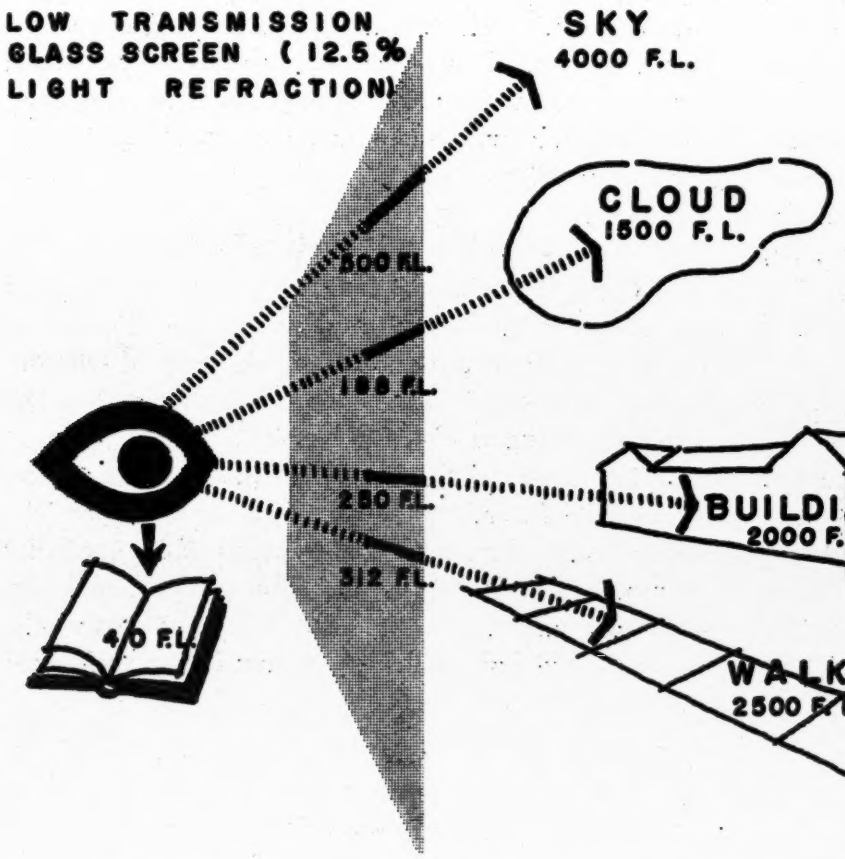
On the basis of our research, which included a study of the literature written on the subject and inspection trips to recently constructed libraries, the following premises were made which offered a realistic basis for design. It was after the establishment of these premises that we felt ready to translate the library needs into architectural form, to start sketching for ideas which would facilitate the library program.

1. THE LIBRARY IS THE "HEART" OF THE UNIVERSITY IN ITS RELATIONSHIP TO OTHER BUILDINGS AND EDUCATIONAL FUNCTIONS: Therefore the building must facilitate, rather than hamper, the harmonious efficiency of the library's plan of service. The building should further whatever emotional, intellectual, and spiritual values the library exists to serve.
2. PRESENT DAY LIBRARY SERVICES PLACE CHIEF EMPHASIS ON THE "USE" OF BOOKS AND MATERIALS: Therefore the greatest possible accessibility for the largest number of patrons should be achieved. The book and the reader must be brought together in an open shelf type of arrangement.
3. THE DYNAMIC UNIVERSITY PROGRAM IS IN A CONSTANT STATE OF FLUX, WITH CHANGING CURRICULUMS, INCREASED ENROLLMENTS, GROWING BOOK COLLECTIONS: Therefore the design must make provisions for these changing patterns. Provision must be made for efficient and economical expansion of the building, and for flexibility of interior arrangements and functions.
4. ADEQUATE AND UNOBTRUSIVE CONTROLS MUST BE ESTABLISHED IN ORDER TO MINIMIZE LOSS AND DESTRUCTION: Therefore special attention should be given to this problem with emphasis on a satisfactory compromise between absolute protection of library materials and absolute freedom in the use of library materials.
5. THE LIBRARY STAFF SHOULD WORK WITH MAXIMUM EFFICIENCY: Therefore the architecture must provide for comfort and health through its inclusion of adequate lighting facilities, proper heating and ventilation system, and correct sound conditioning.

6. THE UNIVERSITY UNDERGRADUATE HAS SPECIAL PSYCHOLOGICAL AND EDUCATIONAL PROBLEMS: Therefore special facilities must be provided for the undergraduate, designed to give the student an appropriate first library experience.
7. THE LIBRARY FUNCTIONS AS A LABORATORY OR WORKSHOP IN WHICH FACULTY, STUDENTS AND STAFF WORK TOGETHER: Therefore provision must be made to supply the special facilities required in a laboratory situation—carrels, seminar rooms, conference rooms, study areas, typing rooms, audio-visual equipment and space, etc.
8. THE PHYSICAL ARRANGEMENTS OF THE LIBRARY MUST REFLECT THE FUNCTIONS AND INTERRELATIONSHIPS OF TEACHER, STUDENT AND STAFF: Therefore easy access and functional relationship of areas must be established on a priority basis. Special considerations must be given to the service area, main reading area, processing area, and stack or storage area.
9. THE BUILDING SHOULD HAVE DISTINCTION AND BEAUTY, SYMBOLIZING ITS IMPORTANCE AS THE HEART AND CENTER OF THE UNIVERSITY'S EDUCATIONAL AND RESEARCH ACTIVITIES, AND SHOULD HARMONIZE WITH THE SURROUNDINGS: Therefore special attention should be given to the development of controlled vistas and views. Outside activities, terraces and adequate parking facilities should also be studied.
10. THE LIBRARY DESIGN MUST MEET THE NEEDS OF EACH PARTICULAR INSTITUTION: Therefore the aims and educational objectives of the university must be defined and then translated into the functions of the library in helping to achieve these aims and objectives.

Functional Planning

The aims and educational objectives of Washington University were fully defined in the building program written to serve each of the architects as a guide to planning. It was important to identify the key areas and plan for their proper relationship in the entire scheme. Our solution centered around the service area, controls, stack area, provision for undergraduates, and flexibility.



Recommended brightness difference between task (book) and surrounding surfaces should be 1 to 10 (or less) for comfort. Use of low transmission glass provides this balance. Table of brightness differences follows:

	Conventional	Proposed
Sky	1 to 38	1 to 5
Cloud	1 to 100	1 to 12.5
Building	1 to 50	1 to 6
Walk	1 to 63	1 to 8

Service Area. Our first consideration centered around the service points of the library, since the chief function of the library is to serve its clientele. Functional planning precludes interior space relationships that will permit the patron to quickly identify and proceed to the desired area without confusion and loss of time. Our scheme permits the library user to enter the building, arrive in the center of activity, and at a glance identify the desired area—be it the card catalog, circulation desk, elevators, stairways, reference room, or periodical room.

Controls. Bringing the book and the reader together results in some conflict. Absolute freedom in the use of materials would soon bring about the loss or destruction of many of them. Too many control points means the addition of staff members to supervise them. Too few control points means the loss of materials and the inability to properly supervise operations. Our solution was to establish one central control point that could

supervise all library activities. In order to relieve pressure during the extra busy periods, we supplemented this control point with another one in the undergraduate reading area.

The Stack Area

Stack Area. The result here was a scheme whereby the stacks become the building, and the building becomes the stacks. The solution permits easy identification of areas. The stairs and elevator lead the user to the lounge area from which he can easily identify the various sections of the book collection. Conference rooms, typing rooms, carrels, study areas, and lounge are all adjacent to the stack area, creating an ideal laboratory situation.

Areas for Undergraduates

Provision for Undergraduates. The undergraduate students make up the largest number of patrons using the library. Reading areas for this group should be strategically placed to avoid congestion and distracting traffic. An easily accessible location is important. The adopted scheme has a three-fold advantage: (a) a separate entrance makes it possible to keep this study area open when the rest of the library is closed, (b) the location brings it in proximity to the central service area, (c) this area can be supervised from the central control point during the times when there is little activity in the library.

Flexibility. The concept of flexibility in library planning has become very important during the past ten years. At the outset we had to define and limit our interpretation of the term flexibility. For our purposes of planning we decided to think of flexibility in terms of *expansibility, convertibility* and *versatility.* Increased enrollments and growing collections mean that the library must have the quality of expansibility to accommodate this growth.

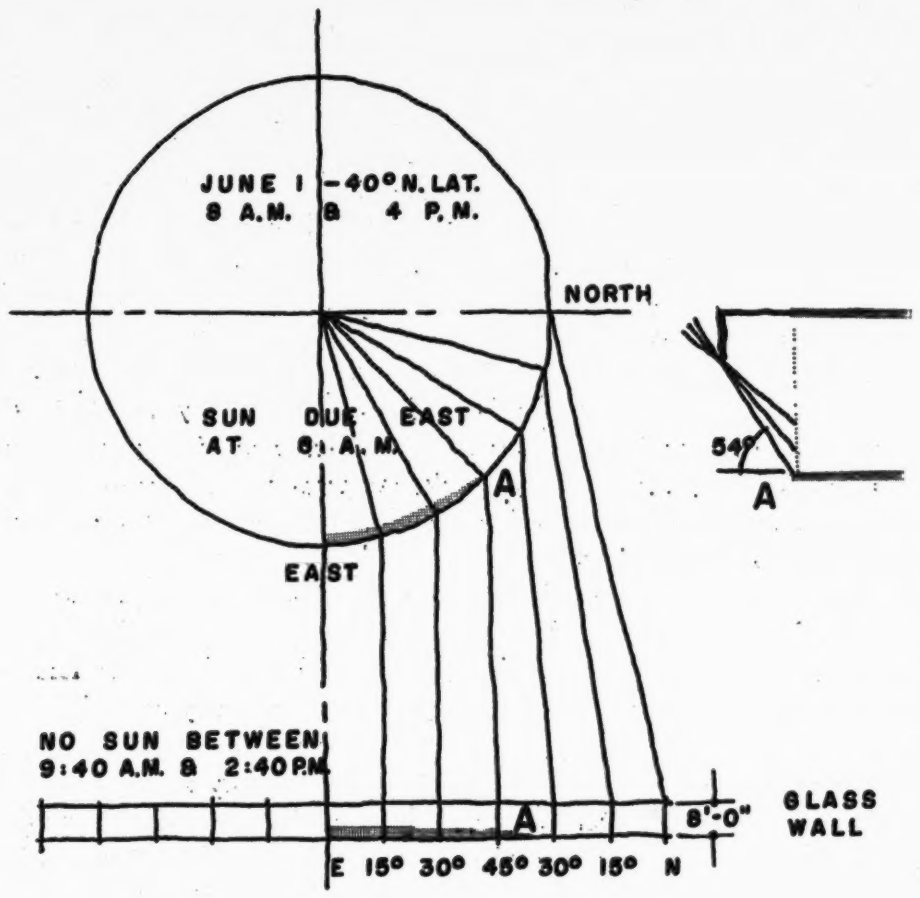
Dynamic Activity Point

The library is a dynamic point of activity in the university program. This means that concepts of library service are always changing, and the library must have the quality of convertibility in order to meet these changes. Present day teaching methods are not confined to the book alone. Developments in the field of motion pictures, electronics and microreproduction demand that the library be prepared to provide such new services as may be needed. Provision, therefore, must be made for a certain quality of versatility to allow for a high utility of space.

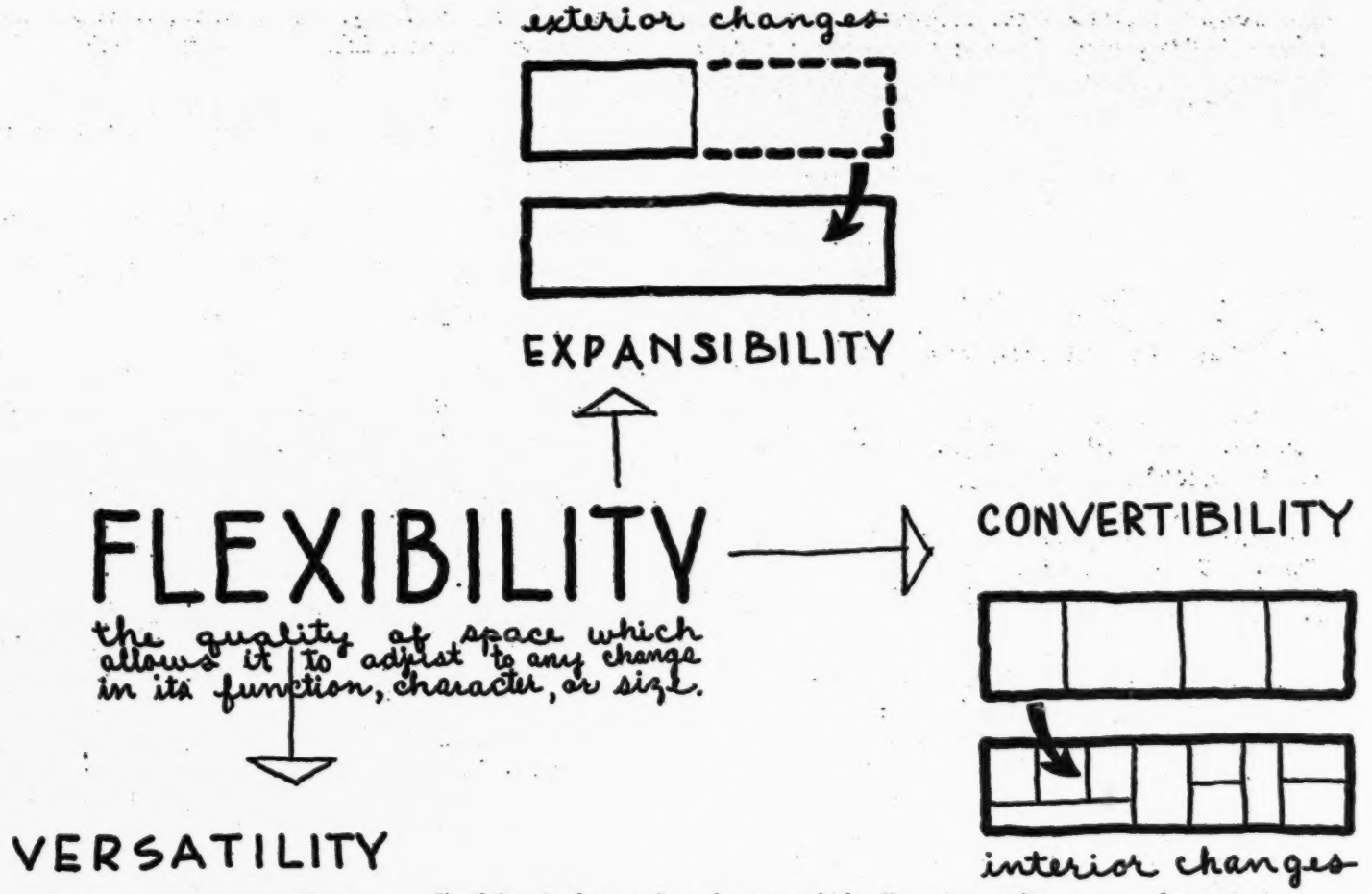
Creating a Functional Plan

There is no "ideal" building plan that will meet the needs of all colleges and universities. Functional design must be based on a thorough study of the educational relationship of the library to the rest of the academic program of the university.

The place of the library in the complex educational unit of a university cannot be stated simply. The library must adapt itself to the needs of its particular patrons and to the philosophy of the educational program of which it is a part. This report has shown the approach we have followed in translating such need



Sun analysis indicates that on June 1, between 8 a.m. and 4 p.m., 85% of all the wall area is in the shade. On August 31, between 9 a.m. and 3 p.m., there is also an 85% shading effect. More effective results would be possible if tracery had as much as a 6" depth. Such a sun control device would help pay for the tracery in savings of air conditioning fuel.



Flexibility is that quality of space which allows it to adjust to any change in its function, character or size. Expansibility refers to exterior changes while convertibility is in terms of interior changes of a building. Multi-function of areas means that the structure has versatility of use.

and philosophy into a functional building which makes the library the central point of intellectual life, and also a dynamic focal point of activity.

Selected References

Planners of university libraries must keep abreast of trends in concepts of library service and building design. Since reading is an important procedure in good planning, a list of pertinent literature is included in this report. Literature on functional planning is increasing in quality and volume in recent years. Most writers in the field today are stressing functional planning, steering away from stock plans.

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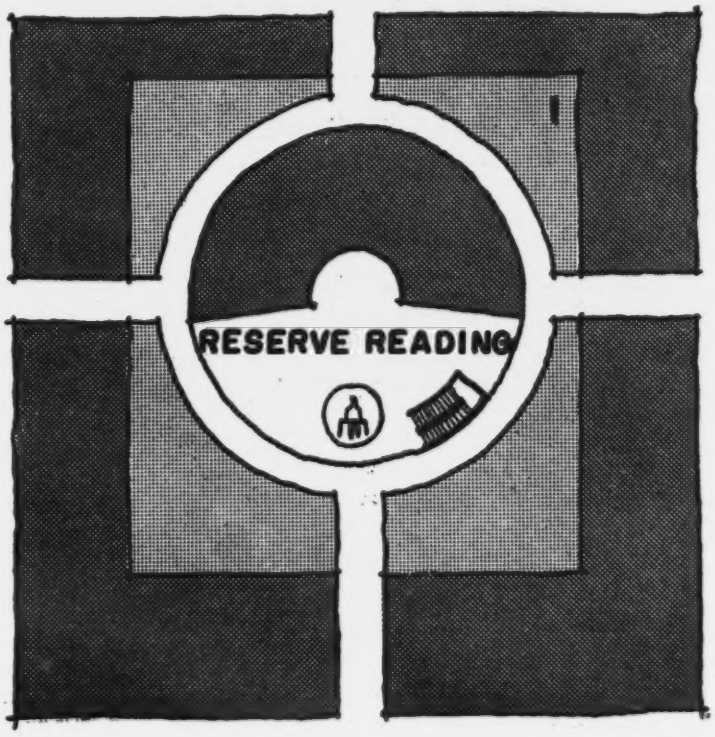
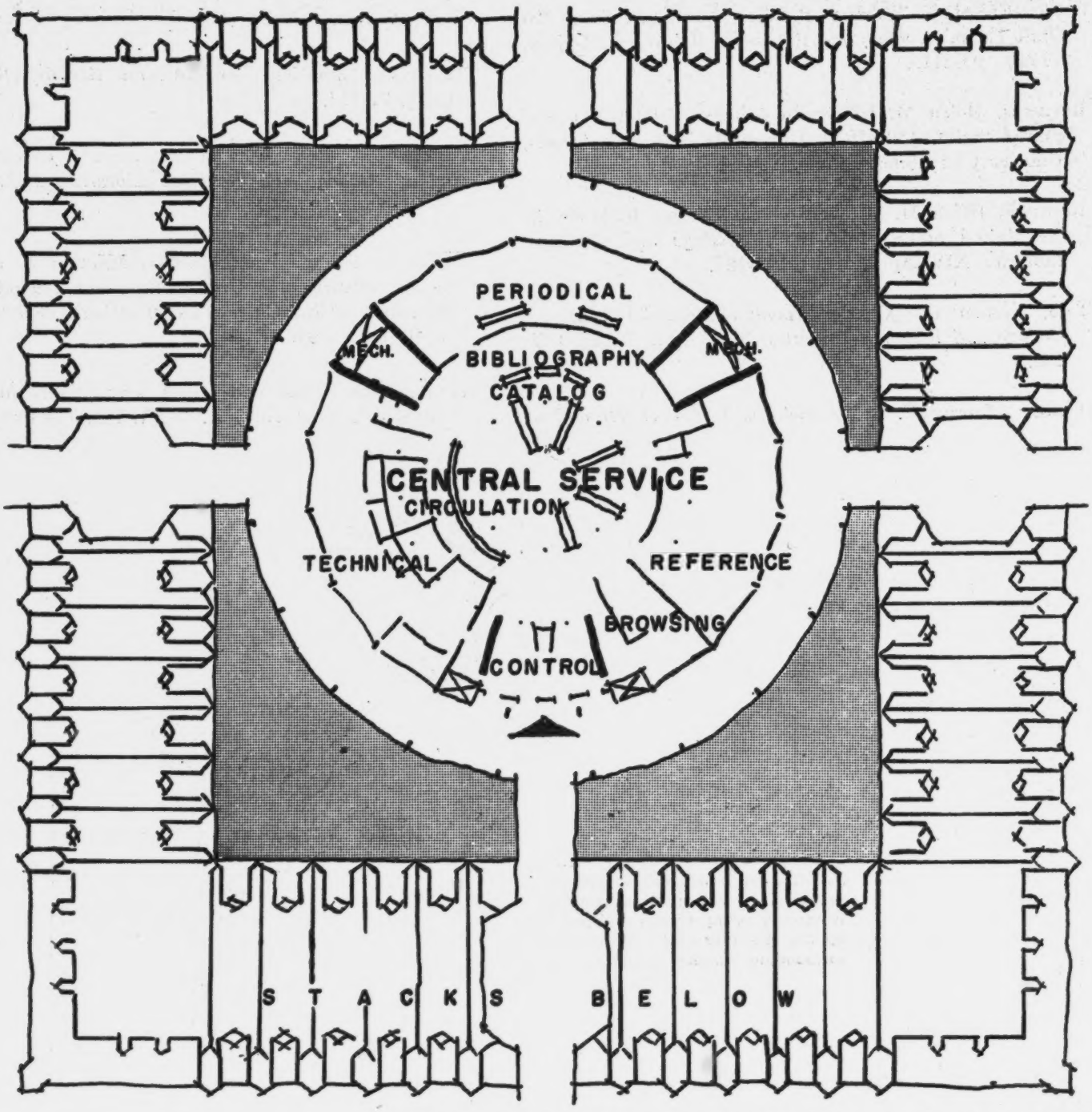
The reserve book and study area has separate stairs from the main vestibule for night and weekend use when the remainder of the library is closed. This separate entrance also reduces the traffic in the main lobby.





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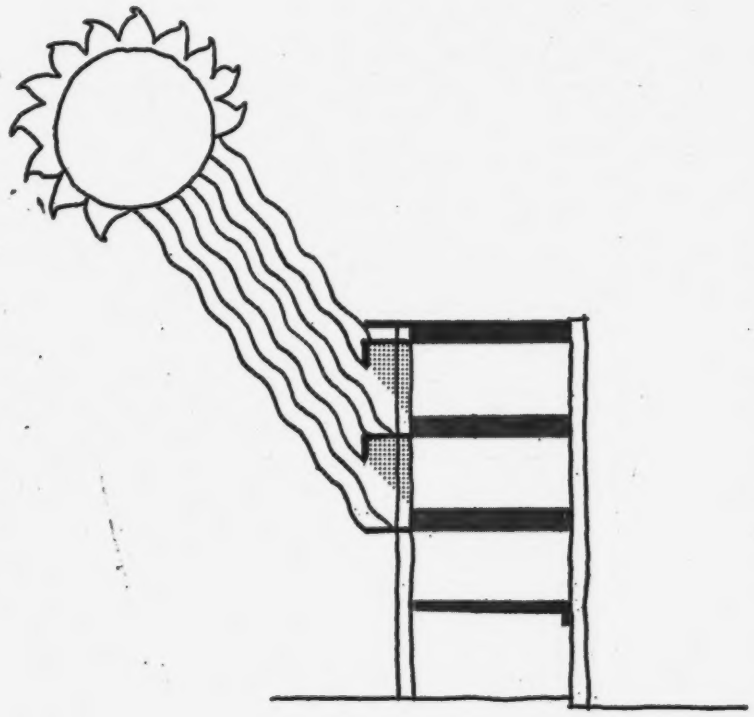

The extended copper tracery with its attached horizontal overhangs provides a sun control device, a window washing system and picks up the character and scale of the surrounding campus buildings.